

Beamforming/Deconvolution Resolution Test

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Rev. A



Resolution Test

2 incoherent broadband sources

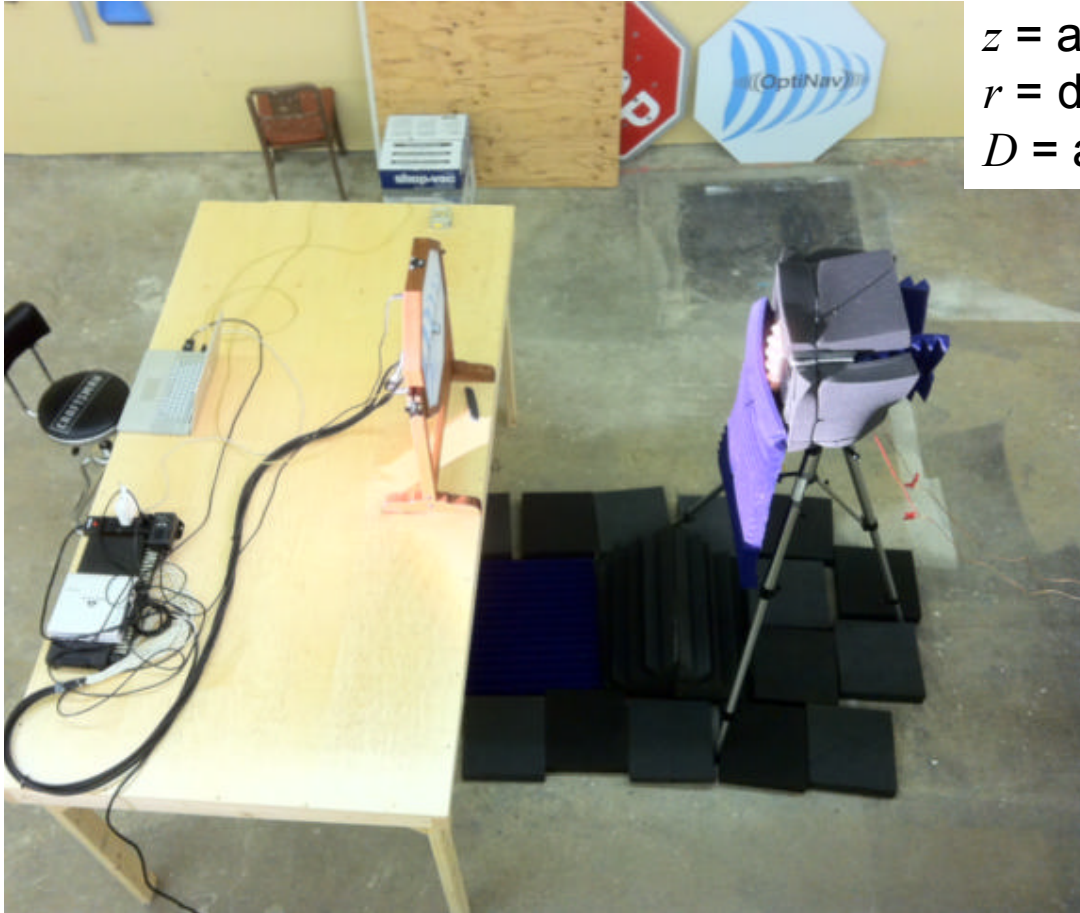
z = array-speaker distance = 1 m

r = distance between speakers = 0.24 m

D = array diameter = 0.35 m (Array 24 Jr.)

Rayleigh limit:

$$\frac{rD}{\lambda z} > 1.22$$



Resolution Test

Freq, Hz

$$\frac{rD}{\lambda z}$$

Conventional BF

DAMAS2

CLEAN-SC

TIDY

MUSIC

1000
.255



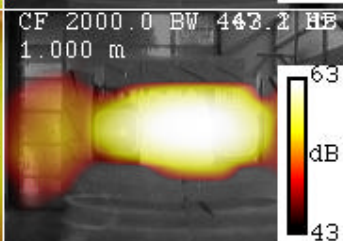
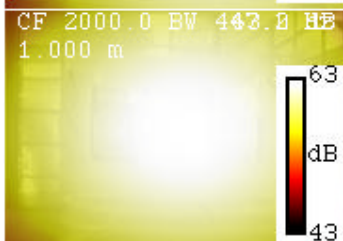
1250
.320



1600
.405



2000
.509



Resolution Test

Freq, Hz

$$\frac{rD}{\lambda z}$$

Conventional BF

DAMAS2

CLEAN-SC

TIDY

MUSIC

2500

.638

3150

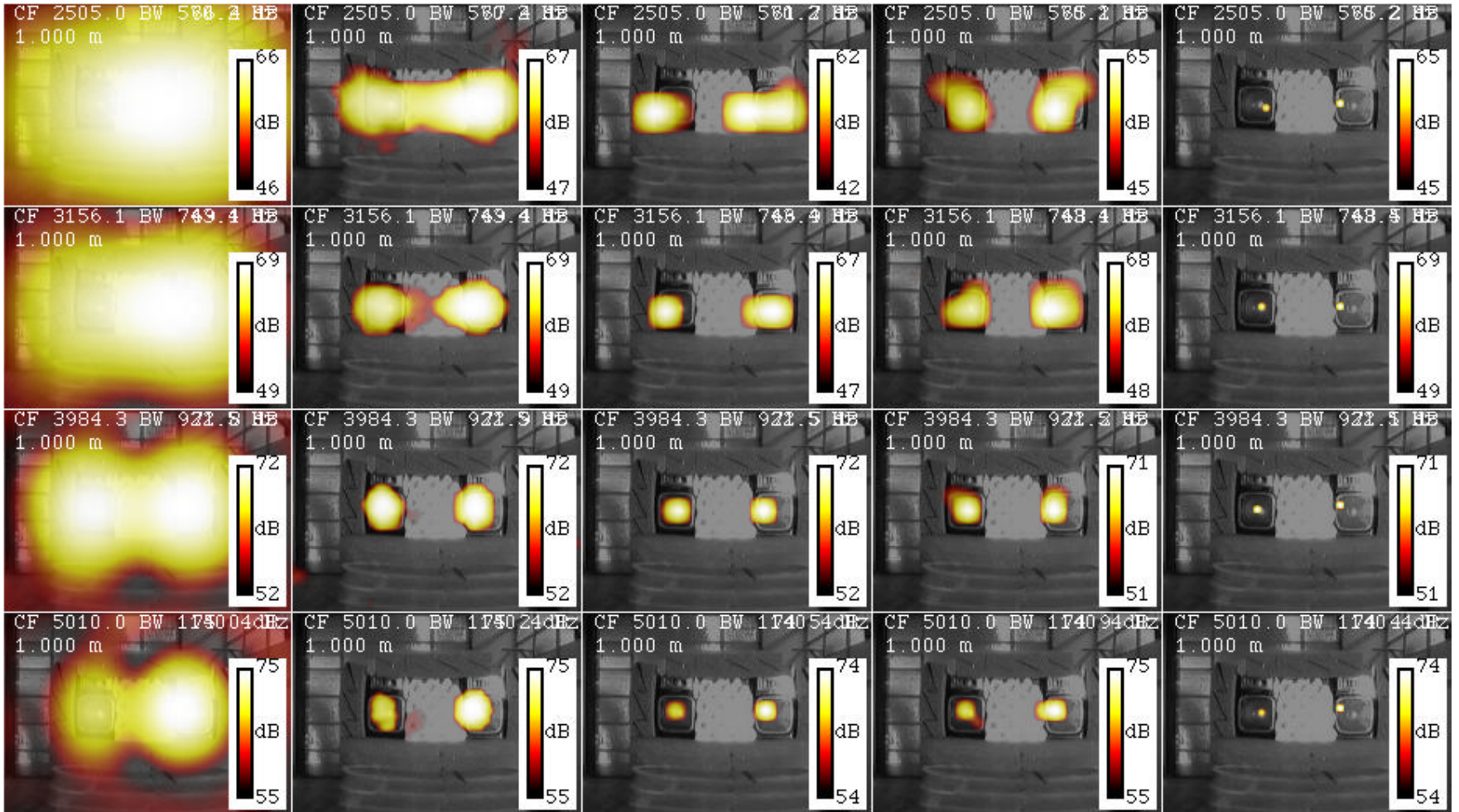
.803

4000

1.01

5000

1.28



Results

Minimum value of $\frac{rD}{\lambda z}$ for source separation

Rayleigh limit: 1.22

Test results. Criterion: peaks located on speakers

Conventional BF	DAMAS2	CLEAN-SC	TIDY	MUSIC
1.01	0.638	0.803	0.638	.405